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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/436,159	11/09/99	BARBERA-GUILLEM	E B-13-NP

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HM22/0418

EXAMINER

CHAKRABARTI, A

ART UNIT

PAPER NUMBER

1655

3

DATE MAILED:

04/18/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/436,159

Applicant(s)

Barbera-Guillem et al.

Examiner

Arun Chakrabarti

Group Art Unit

1655



☒ Responsive to communication(s) filed on Nov 9, 1999

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claim

☒ Claim(s) 1-12 is/are pending in the application

Of the above, claim(s) _____ is/are withdrawn from consideration

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-12 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☒ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☒ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 2

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

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DETAILED ACTION

Election/Restriction

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-12, drawn to a composition comprising a functionalized nanocrystal labeled nucleobase, classified in class 536, subclass 22.1+.
 - II. Claims 13-22, drawn to method of amplifying a target nucleic acid sequence, classified in class 435, subclass 91.2+.
2. The inventions are distinct, each from the other because of the following reasons:

Inventions in Group I and Group II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the method of amplification can be practiced by PCR using radiolabeled nucleobase or avidin-biotin labeled nucleobase..
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
4. During a telephone conversation with Bud Nelson (614-818-1170, ext.201) on March 27, 2000, a provisional election was made without traverse to prosecute the invention of Group I, claims 1-12. Affirmation of this election must be made by applicant in replying to this Office

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action. Claims 13-22 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(I).

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

7. Claims 1-4 are rejected under 35 U.S.C. 102 (e) as anticipated by Weiss et al. (U.S. Patent 5,990,479) (November 23, 1999).

Weiss et al teaches a functionalized nanocrystal-labeled nucleobase comprising a functionalized nanocrystal operably linked to a nucleobase (Abstract, Figure 2, Figure 4 and column 6, lines 50-67);

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and wherein the functionalized nanocrystal comprises one or more reactive functionalities, which are used to operably link the functionalized nanocrystal to the nucleobase (Column 5, line 62 to column 6, line 47).

Weiss et al teaches a functionalized nanocrystal-labeled nucleobase further comprising a linker which operably links the functionalized nanocrystal to the nucleobase (Figures 1-4 and column 7, line 7 to column 8, line 59 and Example 1, column 9, line 64 to column 10, line 24).

Weiss et al teaches a functionalized nanocrystal-labeled nucleobase wherein the one more reactive functionalities is selected from the amino group and the thiol group (Column 8, lines 15-45).

Weiss et al teaches a functionalized nanocrystal-labeled nucleobase wherein the functionalized nanocrystal is capped with a capping compound comprising a mercaptofunctionalized amine, wherein the functionalized nanocrystal further comprises at least one additional coating comprising one or more reactive functionalities, and wherein the at least one coating is selected from the maleimide derivative (Column 8, lines 15-45).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are

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such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1-5 are rejected under 35 U.S.C. 103 (a) over Weiss et al. (U.S. Patent 5,990,479) (November 23, 1999) in view of Hille et al. (U.S. Patent 4,496,675) (January 29, 1985).

Weiss et al teaches the functionalized nanocrystal-labeled nucleobase of claims 1-4 as described above.

Weiss et al does not teach the functionalized nanocrystal-labeled nucleobase wherein the least one additional coating comprises an amino acid containing a diaminocarboxylic acid.

Hille et al teach the use of coating comprises an amino acid containing a diaminocarboxylic acid (Column 4, lines 10-15 and claim 6).

It would have been *prima facie* obvious to one having ordinary skill in the art at the time the invention was made to substitute and combine diaminocarboxylic acid coating model of Hille et al in the nanocrystal method of Weiss et al. since Hille et al. states , "They

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produce coatings having excellent solvent resistance and excellent adhesion, even to difficult substrate (Abstract, last sentence)". An ordinary practitioner would have been motivated to combine diaminocarboxylic acid coating model of Hille et al in the nanocrystal method of Weiss et al. in order to achieve the express advantages noted by Hille et al. of a system which can produce coatings having excellent solvent resistance and excellent adhesion, even to difficult substrate.

10. Claims 1-7 are rejected under 35 U.S.C. 103 (a) over Weiss et al. (U.S. Patent 5,990,479) (November 23, 1999) in view of Hille et al. (U.S. Patent 4,496,675) (January 29, 1985) further in view of Amagi et al. (U.S. Patent 5,945,504) (August 31, 1999).

Weiss et al. in view of Hille et al teach the nanocrystal-labeled nucleobase of claims 1-5 as described above.

Weiss et al. in view of Hille et al do not teach the capping of nanocrystal with mercaptocarboxylic acid.

Amagi et al teaches the use of mercaptocarboxylic acid as coating compound (Column 10, lines 14-20).

It would have been *prima facie* obvious to one having ordinary skill in the art at the time the invention was made to substitute and combine mercaptocarboxylic acid coating model of Amagi et al in the diaminocarboxylic acid containing nanocrystal method of Weiss et al in View of Hille et al. since Amagi et al. states , "Furthermore, the novel episulfide compound of the present invention can be polymerized/cured with a compound having two or more functional

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groups capable of reacting with the episulfide group, a compound having one or more of these functional groups and one or more other homopolymerizable functional groups, or a compound having one functional group which can react with the episulfide group and which is further homopolymerizable, thereby preparing an optical material (Column 10, lines 6-14)". An ordinary practitioner would have been motivated to combine mercaptocarboxylic acid coating model of Amagi et al in the diaminocarboxylic acid containing nanocrystal method of Weiss et al in View of Hille et al. in order to achieve the express advantages noted by Amagi et al. of a system which provides a method of preparing an optical material.

11. Claims 1-12 are rejected under 35 U.S.C. 103 (a) over Weiss et al. (U.S. Patent 5,990,479) (November 23, 1999) in view of Hille et al. (U.S. Patent 4,496,675) (January 29, 1985) further in view of Amagi et al. (U.S. Patent 5,945,504) (August 31, 1999) further in view of Stratagene catalog ((1988, Page 39).

Weiss et al. in view of Hille et al. further in view of Amagi et al teach the plurality of species of functionalized nanocrystal-labeled nucleobases including all the reagents and linkers.

Weiss et al. in view of Hille et al. further in view of Amagi et al do not teach the motivation to combine all the reagents of the plurality of species of functionalized nanocrystal-labeled nucleobases in the form of a kit.

Stratagene catalog teaches a motivation to combine reagents into kit format (page 39).

It would have been *prima facie* obvious to one having ordinary skill in the art at the time the invention was made to combine all the reagents required to form the plurality of species of

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functionalized nanocrystal-labeled nucleobases into a kit format as discussed by Stratagene catalog since the Stratagene catalog teaches a motivation for combining reagents of use in an assay into a kit, "Each kit provides two services: 1) a variety of different reagents have been assembled and pre-mixed specifically for a defined set of experiments. Thus one need not purchase gram quantities of 10 different reagents, each of which is needed in only microgram amounts, when beginning a series of experiments. When one considers all of the unused chemicals that typically accumulate in weighing rooms, desiccators, and freezers, one quickly realizes that it is actually far more expensive for a small number of users to prepare most buffer solutions from the basic reagents. Stratagene provides only the quantities you will actually need, premixed and tested. In actuality, the kit format saves money and resources for everyone by dramatically reducing waste. 2) The other service provided in a kit is quality control". (page 39, column 1).

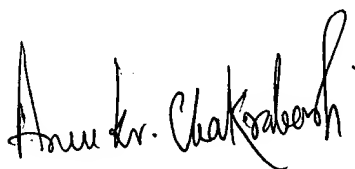
Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arun Chakrabarti, Ph.D. whose telephone number is (703) 306-5818. The examiner can normally be reached on 7:00 AM-4:30 PM from Monday to Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Jones, can be reached on (703) 308-1152. The fax phone number for this Group is (703) 305-7401.


Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0196.



Arun Chakrabarti,

Patent Examiner,

March 29, 2000



W. Gary Jones
Supervisory Patent Examiner
Technology Center 1600